



## PATENT APPLICATION

### IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: Q76266

Hiroyuki ASAOKO, et al.

Appln. No.: 10/608,625

Group Art Unit: 1645

Confirmation No.: 9860

Examiner: Unknown

Filed: June 30, 2003

For: MODIFIED REDUCTASE AND ITS GENE, AND USE THEREOF

#### INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §§ 1.97 and 1.98

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In accordance with the duty of disclosure under 37 C.F.R. § 1.56, Applicant hereby notifies the U.S. Patent and Trademark Office of the documents which are listed on the attached PTO/SB/08 A & B (modified) form and/or listed herein and which the Examiner may deem material to patentability of the claims of the above-identified application.

1. JP-A 10-94399, published April 14, 1998, to SHINYA et al., with English Abstract.
2. ITOH et al., "Production of chiral alcohols by enantioselective reduction with NADH-dependent phenylacetaldehyde reductase from *Corynebacterium* stain, ST-10", *Journal of Molecular Catalysis B: Enzymatic*, Vol. 6, 1999, pp. 41-50.
3. ITOH et al., "Purification and Characterization of Phenylacetaldehyde Reductase from a Styrene-Assimilating *Corynebacterium* Strain, ST-10", *Applied and Environmental Microbiology*, Vol. 63, No. 10, October, 1997, pp. 3783-3788.
4. WANG et al., "Cloning, sequence analysis, and expression in *Escherichia coli* of the gene encoding phenylacetaldehyde reductase from styrene-assimilating *Corynebacterium* sp. Strain ST-10", *Applied Microbiology Biotechnology*, Vol. 52, 1999, pp. 386-392.

ASAKO et al.  
Appln. No. 10/608,625  
Information Disclosure Statement

5. JP-B2 2566962, issued October 3, 1996, to Denki Kagaku Kogyo KK, with English Abstract.
6. JP-A 1-222787, published September 6, 1989, to Nippon Synthetic Chem. Ind., Co., with English Abstract.
7. JP-A 60-251890, published December 12, 1985, to Nippon Synthetic Chem. Ind. Co., with English Abstract.
8. JP-A 63-123387, published May 27, 1988, to Denki Kagaku Kogyo KK, with English Abstract.
9. U.S. Patent No. 4,895,979, issued January 23, 1990, to Noyori et al.
10. U.S. Patent No. 6,218,156 B1, issued April 17, 2001, to Yasohara et al.
11. U.S. Patent No. 6,312,933 B1, issued November 6, 2001, to Kimoto et al.
12. U.S. Patent No. 5,908,953, issued June 1, 1999, to Matsuda et al.
13. ITOH et al., "1465. Chiral alcohols production by enantioselective reduction with NADH-dependent phenylacetaldehyde reductase (PAR)", *Book of Abstracts, 2000 International Chemical Congress of Pacific Basin Societies*, December 14-19, 2000, p. 9.
14. ITOH et al., "3Y7p7. Production of optically active alcohol by using a phenylacetaldehyde reductase (PAR) recombinant strain", *Nippon Nogeikagaku Kaishi*, Vol. 75, March 5, 2001, with translation of 3Y7P7.
15. ITOH et al., "3F302β. Analysis of the phenylacetaldehyde reductase (PAR) gene from styrene-assimilating *Corynebacterium*", *Nippon Nogeikagaku Kaishi*, Vol. 74, March 5, 2000, with translation of 3F302β.
16. ITOH et al., "3F303α. Production of optically active alcohol by using the phenylacetaldehyde reductase (PAR) from *Corynebacterium* sp. ST10", *Nippon Nogeikagaku Kaishi*, Vol. 74, March 5, 2000, with translation of 3F303α.
17. U.S. Patent Application Publication No. 2003/0134402 A1, published July 17, 2003, to Asako et al.
18. ASAKO et al., "P214. Chiral Alcohol Production by β-Ketoester Reductase from *Penicillium citrinum* Coupled with Regeneration System of NADPH", *Chem. Litsy 97, 6<sup>th</sup> International Symposium on Biocatalysis and Biotransformations*, June 28-July 3, 2003, p. 489.
19. Lecture Summary Series of the 6<sup>th</sup> Organism Catalyst Chemistry Symposium, December 12-13, 2002, p. 70, with partial English translation.
20. Conference Lecture Summary Series, published March 5, 2003, 3A11a01, with partial English translation.

ASAKO et al.  
Appln. No. 10/608,625  
Information Disclosure Statement

21. JP-A 2001-294549, published October 23, 2001, to Pfizer Prod. Inc., with English Abstract.

One copy of each of the listed documents is submitted herewith.

The present Information Disclosure Statement is being filed: (1) No later than three months from the application's filing date; (2) Before the mailing date of the first Office Action on the merits (whichever is later); or (3) Before the mailing date of the first Office Action after filing a request for continued examination (RCE) under §1.114, and therefore, no Statement under 37 C.F.R. § 1.97(e) or fee under 37 C.F.R. § 1.17(p) is required.

The submission of the listed documents is not intended as an admission that any such document constitutes prior art against the claims of the present application. Applicant does not waive any right to take any action that would be appropriate to antedate or otherwise remove any listed document as a competent reference against the claims of the present application.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,

  
John T. Callahan  
Registration No. 32,607

SUGHRUE MION, PLLC  
Telephone: (202) 293-7060  
Facsimile: (202) 293-7860

WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: January 5, 2004

<p>Substitute for Form 1449 A &amp; B/PTO <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> (use as many sheets as necessary)</p>				<i>Complete if Known</i>	
				Application Number	10/608,625
				Confirmation Number	9860
				Filing Date	June 30, 2003
				First Named Inventor	Hiroyuki ASAOKO
				Art Unit	1645
				Examiner Name	Unknown
Sheet	1	of	2	Attorney Docket Number	Q76266

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
		Number	Kind Code <sup>2</sup> (if known)		
		US 4,895,979	A	01-23-1990	Noyori et al.
		US 6,218,156	B1	04-17-2001	Yasohara et al.
		US 6,312,933	B1	11-06-2001	Kimoto et al.
		US 5,908,953	A	06-01-1999	Matsuda et al.
		US 2003/0134402	A1	07-17-2003	Asako et al.
		US			

FOREIGN PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
		Country Code <sup>3</sup>	Number <sup>4</sup>		
		JP	10-94399	A	04-14-1998
		JP	2566962	B2	10-03-1996
		JP	01-222787	A	09-06-1989
		JP	60-251890	A	12-12-1985
		JP	63-123387	A	05-27-1988
		JP	2001-294549	A	10-23-2001

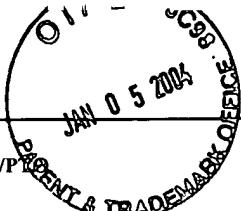
NON PATENT LITERATURE DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city, and/or country where published.			Translation <sup>6</sup>
		ITOH et al., "Production of chiral alcohols by enantioselective reduction with NADH-dependent phenylacetaldehyde reductase from <i>Corynebacterium</i> stain, ST-10", <i>Journal of Molecular Catalysis B: Enzymatic</i> , Vol. 6, 1999, pp. 41-50			
		ITOH et al., "Purification and Characterization of Phenylacetaldehyde Reductase from a Styrene-Assimilating <i>Corynebacterium</i> Strain, ST-10", <i>Applied and Environmental Microbiology</i> , Vol. 63, No. 10, October, 1997, pp. 3783-3788			
		WANG et al., "Cloning, sequence analysis, and expression in <i>Escherichia coli</i> of the gene encoding phenylacetaldehyde reductase from styrene-assimilating <i>Corynebacterium</i> sp. Strain ST-10", <i>Applied Microbiology Biotechnology</i> , Vol. 52, 1999, pp. 386-392			
		ITOH et al., "1465. Chiral alcohols production by enantioselective reduction with NADH-dependent phenylacetaldehyde reductase (PAR)", <i>Book of Abstracts, 2000 International Chemical Congress of Pacific Basin Societies</i> , December 14-19, 2000, p. 9			
		ITOH et al., "3Y7p7. Production of optically active alcohol by using a phenylacetaldehyde reductase (PAR) recombinant strain", <i>Nippon Nogeikagaku Kaishi</i> , Vol. 75, March 5, 2001, with translation of 3Y7P7			

Examiner Signature	Date Considered
--------------------	-----------------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>See Kind Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov), MPEP 901.04 or in the comment box of this document. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST. 3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to indicate here if English language Translation is attached.

Substitute for Form 1449 A &amp; B/PTO



**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Sheet	2	of	2	Attorney Docket Number	Q76266
-------	---	----	---	------------------------	--------

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
		Number	Kind Code <sup>2</sup> (if known)		
	US				

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Translation <sup>6</sup>
		Country Code <sup>3</sup>	Number <sup>4</sup>			

NON PATENT LITERATURE DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city, and/or country where published.			Translation <sup>6</sup>
		ITOH et al., "3F302B. Analysis of the phenylacetaldehyde reductase (PAR) gene from styrene-assimilating <i>Corynebacterium</i> ", <i>Nippon Nogeikagaku Kaishi</i> , Vol. 74, March 5, 2000, with translation of 3F302B			
		ITOH et al., "3F303a. Production of optically active alcohol by using the phenylacetaldehyde reductase (PAR) from <i>Corynebacterium</i> sp. ST10", <i>Nippon Nogeikagaku Kaishi</i> , Vol. 74, March 5, 2000, with translation of 3F303a			
		ASAKO et al., "P214. Chiral Alcohol Production by β-Ketoester Reductase from <i>Penicillium citrinum</i> Coupled with Regeneration System of NADPH", <i>Chem. Litsy</i> 97, 6 <sup>th</sup> International Symposium on Biocatalysis and Biotransformations, June 28-July 3, 2003, p. 489			
		Lecture Summary Series of the 6 <sup>th</sup> Organism Catalyst Chemistry Symposium, December 12-13, 2002, p. 70, with partial English translation			
		Conference Lecture Summary Series, published March 5, 2003, 3A11a01, with partial English translation			

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>See Kind Codes of USPTO Patent Documents at www.uspto.gov, MPEP 901.04 or in the comment box of this document. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST. 3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup>Applicant is to indicate here if English language Translation is attached.